

**THE *POLANA (POLANANA) SANA* SPECIES GROUP  
(HEMIPTERA: CICADELLIDAE: GYPONINAE),  
WITH DESCRIPTIONS OF SIX NEW SPECIES<sup>1</sup>  
FROM SOUTH AMERICA**

**Paul H. Freytag<sup>2</sup>**

**ABSTRACT:** The *Polana (Polanana) sana* species group consists of eight species. Included are: *P. (P.) sana* DeLong (= *P. (P.) santana* DeLong and Foster, new synonym), *P. (P.) tropica* DeLong and Triplehorn, and six new species, *P. (P.) ordinaria*, *P. (P.) brevis*, *P. (P.) declivata*, *P. (P.) diplota*, *P. (P.) minima*, and *P. (P.) ancistra*. *Polana (P.) sana* is now known from Bolivia, Brazil, Colombia and Peru, *P. (P.) tropica* and *P. (P.) brevis* are known from Colombia and Peru, and the other five species are only known from Colombia.

**KEY WORDS:** Leafhoppers, Hemiptera, Cicadellidae, Gyponinae, *Polana*, South America

The genus *Polana* DeLong is a group of leafhoppers belonging to the subfamily Gyponinae (Scarinae) that contains some 130 species (DeLong and Freytag, 1972, DeLong, 1979, DeLong and Triplehorn, 1979 and DeLong and Foster, 1982). Most species are from 5 to 10 mm in length, are robust and oval in body shape, and have few color markings. The crown is short, broad, and rounded to the face, with the ocelli near the anterior margin, and with transverse striae between the compound eyes. All species are found in the New World.

The *sana* species group belongs in the subgenus *Polanana* DeLong and Freytag (1972) that contains nineteen species from South America. This subgenus is characterized by having the male genitalia without paraphysis or even the aedeagus without basal processes, and the pygofer without processes.

All species in the *sana* species group look much alike, being either dark brown or black, and nearly the same length from 7 to 8.5 mm. They can only be separated at this time by the differences in the male genitalia. Most species have the median area of the style bulging and sticking out of the genital capsule, which can often be used to spot specimens of this group.

Acronyms used in this paper are the following: IHVL = Instituto von Humboldt, Villa de Leyva, Colombia; and UKYL = University of Kentucky Collection, Lexington, Kentucky, USA.

<sup>1</sup> Received on December 12, 2005. Accepted on April 16, 2007.

<sup>2</sup> Department of Entomology, University of Kentucky, Lexington, Kentucky 40546-0091 U.S.A., E-mail: freytag2104@windstream.net.

***Polana (Polanana) sana* DeLong**

(Figures 1-4)

*Polana (Polanana) sana* DeLong 1979, p. 299.

*Polana (Polanana) santana* DeLong and Foster 1982, p. 118. New synonym.

Length of males 8-8.5 mm, females unknown. This species was described by DeLong (1979) and again by DeLong and Foster (1982). Both types are the same and represent the same species.

The male genitalia are illustrated again (Figs. 1-4) for comparative purposes. In the original descriptions the aedeagus was illustrated without hair-like processes. These could have been broken off, but they are also very difficult to see.

This species is now known to occur in Bolivia, Brazil, Colombia and Peru.

***Polana (Polanana) minima* Freytag, new species**

(Figures 5-6)

**Description:** Length of males 7.2-7.4 mm, females unknown. Similar to *sana*, but smaller and with different male genitalia. Male genitalia: Pygofer and genital plates similar to *sana*. Style (Fig. 5) similar to *sana*, except notch on apical margin represented by short spine. Aedeagus (Fig. 6) similar to *sana*, except shorter, thicker in ventral view, with shorter apical hair-like processes.

**Type Data:** Holotype male: Colombia: Putumayo, PNN La Paya, Cabaña Viviano Cocha, 0°7' S 74°56' W, 320 m., Malaise, II-1-10-2003, R. Cobete, M 3156 (IHVL). Paratype male: Same data as holotype (IHVL).

**Additional Specimens:** Ten males, same locality as holotype, various dates from 2001 to 2003 (IHVL and UKYL).

**Differential Diagnosis:** This species is very similar to *sana*, but is smaller and has a short spine at the base of the apical margin of the male style, and a shorter, stouter aedeagus.

***Polana (Polanana) declivata* Freytag, new species**

(Figures 7-8)

**Description:** Length of males 7.8-8.2 mm, females unknown. Similar to *sana*, but slightly smaller, with different male genitalia. Male genitalia: Pygofer and genital plates similar to *sana*. Style (Fig. 7) with large medially pointed spine near apex. Aedeagus (Fig. 8) similar to *minima*, with slight narrowing of shaft on apical half, very short hair-like processes at apex.

**Type Data:** Holotype male: Colombia: Meta, PNN Macarena, Borde Rio Guejar, 3°20' N 73°56' W, 460 m., Malaise, XII-24-28-2001, D. Campos, M 2609 (IHVL). Paratype males: One, Meta, PNN Tingua, Vda. Bajo Raudal, 2°16' N

73°48' W, 460 m., Malaise, II-2-16-2002, M 2329 (IHVL); two, same data, except I-19-II-2-2002, M 2331, (IHVL and UKYL); one, Meta, PNN Tingua, Caño Nevera, 2°11' N 73°48' W, 390 m, Malaise, II-7-16-2002, C. Sanchez, M 2334 (IHVL) and one, Meta, PNN Sierra de La Macarena, Caño Curia Parcela, 3°21' N 73°5' W, 460 m., Malaise, II-9-III-24-2003, W. Villeda, M 3531 (IHVL).

**Additional male specimen:** Colombia, Cundinamarca, PNN Sumapaz, Jardín Botánico, 3°48' N 73°56' W, 730 m., Malaise, I-4-24-2002, H. Vargas, M 3109 (IHVL).

**Differential Diagnosis:** This species is close to *sana*, but differs by the very different male style which appears to be closer to *tropica*.

***Polana (Polanana) tropica* DeLong and Triplehorn**  
(Figures 9-10)

*Polana (Polanana) tropica* DeLong and Triplehorn, 1979, p. 180.

Length of males 7.5-8 mm, females unknown. This species was described from Peru. It has a very characteristic male style (Fig. 9), with a long, bent spine near middle of apical margin. The aedeagus (Fig. 10) appears to lack the apical hair-like processes.

**Specimens Seen:** Besides the type, nine males from Colombia: Amazonas and Vaupès, collected in December and January, from 60 to 380 m, Malaise (IHVL and UKYL).

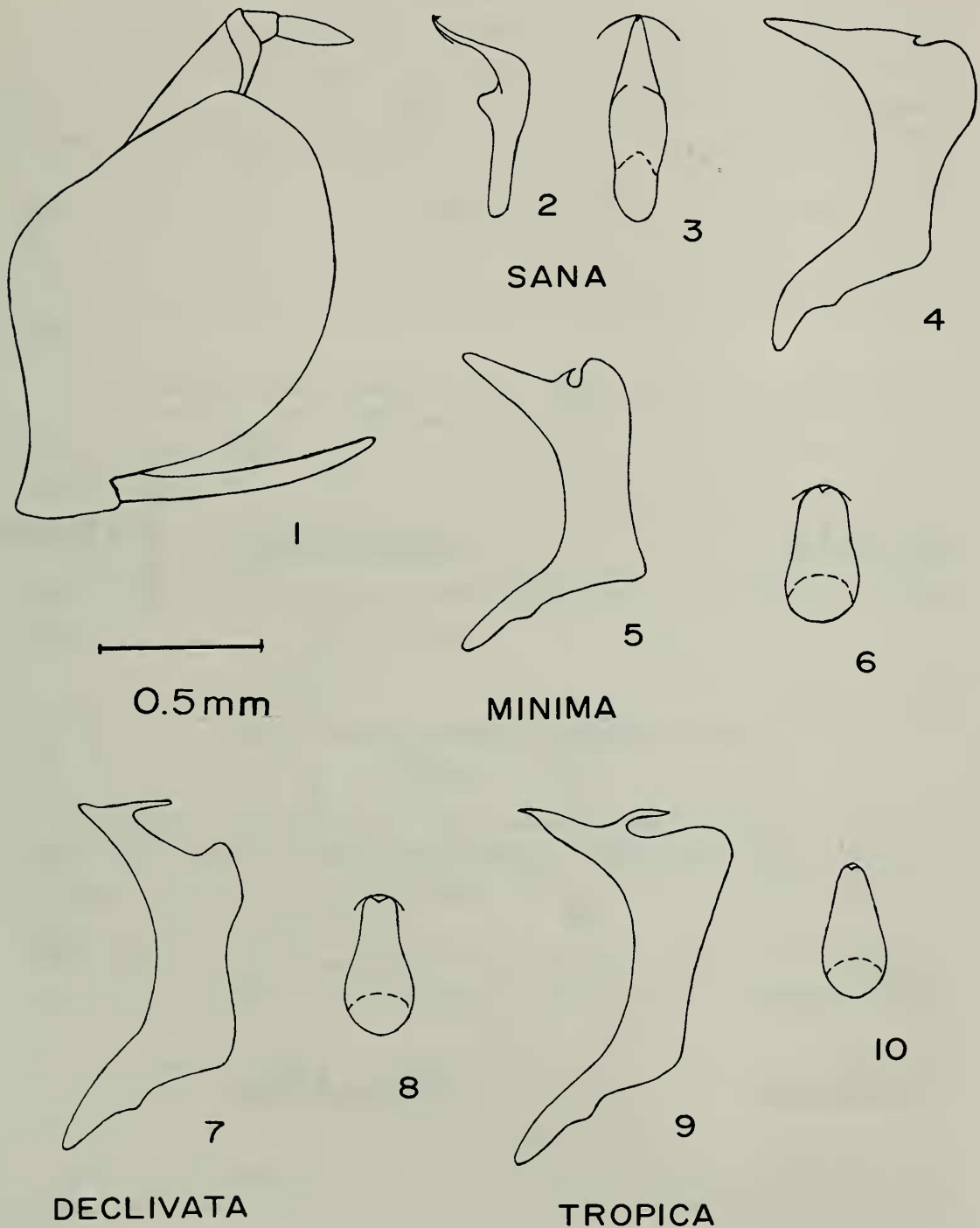
***Polana (Polanana) diplota* Freytag, new species**  
(Figures 11-12)

**Description:** Length of males 7.5-8 mm, females unknown. Similar to *tropica*, but with a different type of spine on male style. Male genitalia: Pygofer and genital plates similar to *sana*. Style (Fig. 11) with spine near middle of apical margin which parallels apex, shorter than apex. Aedeagus (Fig. 12) similar to *tropica*.

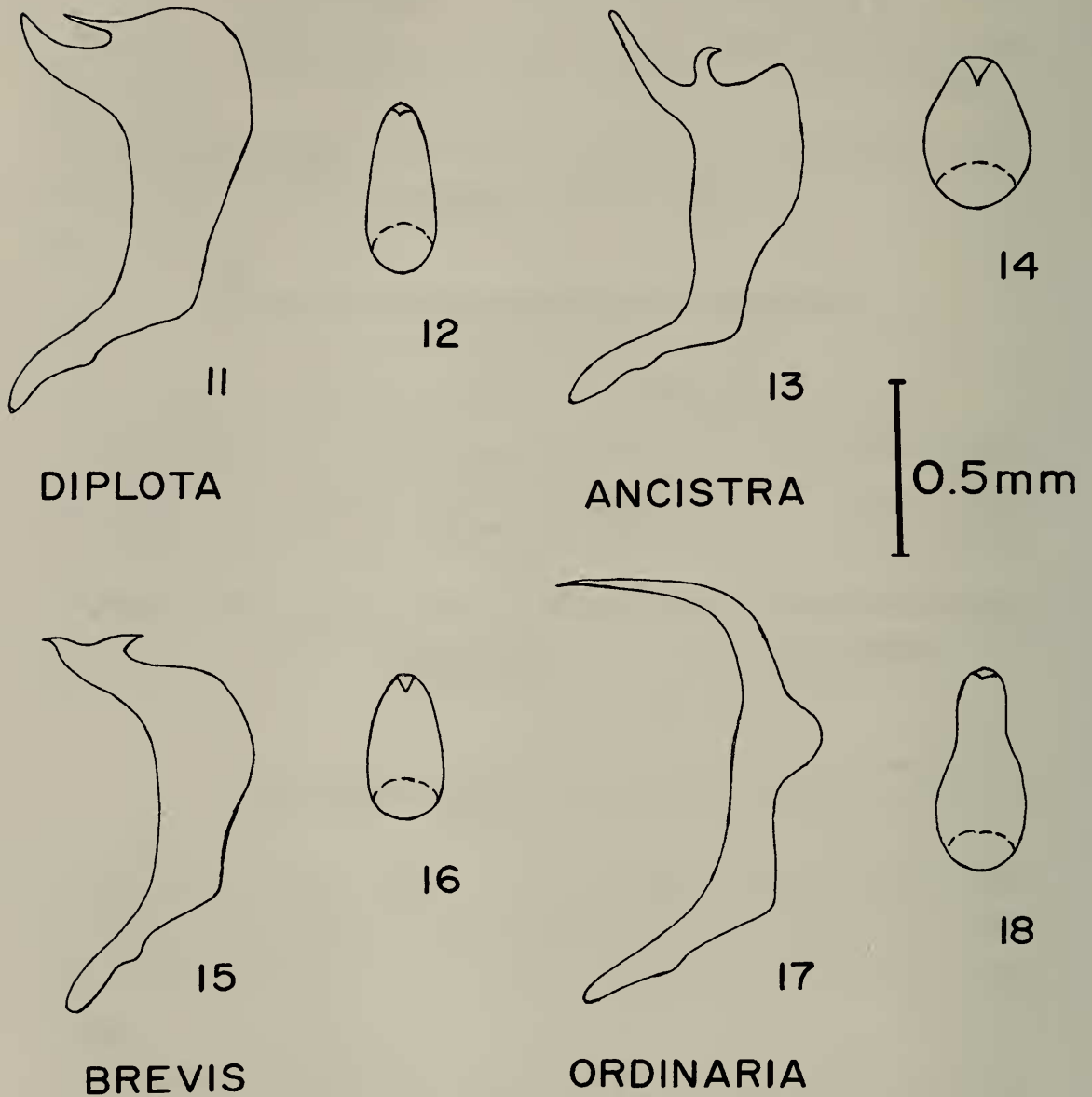
**Type Data:** Holotype male: Colombia: Putumayo, PNN La Paya, Resguardo Cecillo Cocha, 0°11' S 74°55' W, 190 m, Malaise, I-20-24-2003, C. Sarmiento, M 3419 (IHVL). Paratype males: Four, same data as holotype (IHVL and UKYL).

**Additional Specimens:** Six males, same data as holotype, except various dates from 2001 to 2003, and various altitudes up to 320 m, (IHVL and UKYL); and one male, Amazonas, PNN Amacayacu, Matamata, 3°23' S 70°6' W, 150 m., Malaise, XI-19-XII-3-2001, D. Chota, M 2768 (IHVL).

**Differential Diagnosis:** This species is close to *tropica*, but has a different style with the spine pointing towards the apex, whereas in *tropica* it bends towards the median margin.



Figures 1-4. *Polana (Polanana) sana* DeLong. Fig. 1. Male genital capsule, lateral view. Fig. 2. Aedeagus, lateral view. Fig. 3. Aedeagus, caudal view. Fig. 4. Style, lateral view. Figures 5-6. *P. (P.) minima* Freytag, n. sp. Fig. 5. Style, lateral view. Fig. 6. Aedeagus, caudal view. Figures 7-8. *P. (P.) declivata* Freytag, n. sp. Fig. 7. Style, lateral view. Fig. 8. Aedeagus, caudal view. Figures 9-10. *P. (P.) tropica* DeLong and Triplehorn. Fig. 9. Style, lateral view. Fig. 10. Aedeagus, caudal view. All drawn to the same scale.



Figures 11-12. *Polana (Polana) diplota* Freytag, n. sp. Fig. 11. Style, lateral view. Fig. 12. Aedeagus, caudal view. Figures 13-14. *P. (P.) ancistra* Freytag, n. sp. Fig. 13. Style, lateral view. Fig. 14. Aedeagus, caudal view. Figures 15-16. *P. (P.) brevis* Freytag, n. sp. Fig. 15. Style, lateral view. Fig. 16. Aedeagus, caudal view. Figures 17-18. *P. (P.) ordinaria* Freytag, n. sp. Fig. 17. Style, lateral view. Fig. 18. Aedeagus, caudal view. All drawn to the same scale.

***Polana (Polanana) ancistra* Freytag, new species**  
(Figures 13-14)

**Description:** Length of males 7.5-8 mm, females unknown. Similar to *tropica*, but with a different male style and aedeagus. Male genitalia: Pygofer and genital plates as in *sana*. Style (Fig. 13) with long thin apex, spine in median apical margin hook-like. Aedeagus (Fig. 14) similar to *tropica*, but shorter, stouter.

**Type Data:** Holotype male: Colombia: Amazonas, PNN Amacacacu, San Martín, 3°23' S 70°6' W, 150 m., Malaise, II-23-III-3-2001, B. Amado, M 2040 (IHVL). Paratype males: One, same data as holotype, except V-16-23-2000, M 691 (IHVL); one, same data as holotype, except VII-17-30-2000, M 701 (IHVL) and two, same data as holotype, except X-10-18-2000, M 835 (IHVL and UKYL).

**Additional Specimens:** Twenty males, same locality as holotype, various dates from 2000 to 2004 (IHVL and UKYL); one male, Vaupès, RN Mosiro Itajura (Caparú), Centro Ambiental, 1°4' S 69°31' W, 60 m., Malaise, I-20-21-2003, M. Sharkey and D. Arias, M 3386 (IHVL) and three males, same data as last, except Igapo, IX-7-22-2003, L. Benarides, M 3393 (IHVL and UKYL).

**Differential Diagnosis:** This species is close to *tropica*, but the style has a longer bulge on the medial side, and a thinner apex, with a shorter hook-like spine.

***Polana (Polanana) brevis* Freytag, new species**  
(Figures 15-16)

**Description:** Length of male 7.5 mm, female unknown. Similar to *tropica*, but with a different male style and longer aedeagus. Male genitalia: Pygofer and genital plates similar to *sana*. Style (Fig. 15) with short, thick spine near apex. Aedeagus (Fig. 16) short, stout.

**Type Data:** Holotype male: Colombia: Putumayo, PNN La Paya, La Nueva Paya, 0°2' S 75°12' W, 210 m., Malaise, I-31-II-5-2003, C. Sarmiento, M 3423 (IHVL).

**Additional Specimen:** One male, Peru: Madre de Dios, near Puerto Maldonado, Posadas Amazonas Lodge, at Rio Tambopata, 186 m., 12°48'115" S 69°18'019" W, IX-30-X-3-2004, C. R. Bartlett (UKYL).

**Differential Diagnosis:** This species is close to *tropica*, but the spine on the male style is shorter and closer to the apex, which makes the apex look almost bifurcate.

***Polana (Polanana) ordinaria* Freytag, new species**  
(Figures 17-18)

**Description:** Length of male 7.5 mm, female unknown. Similar to *tropica*, but with a very different male style. Male genitalia: Pygofer and genital plates similar to *sana*. Style (Fig. 17) long, with small bulge near middle, then narrowing, curving dorsad to pointed apex. Aedeagus (Fig. 18) similar to *declivata*, but without hair-like processes at apex.

**Type Data:** Holotype male: Colombia: Amazonas, Cgto. La Pedrera, Comunidad Camaritagua, 1°20' S 69°35' W, 380 m., Malaise, XII-24-2003-I-13-2004, J. López, M 4168 (IHVL).

**Differential Diagnosis:** This species is similar to *tropica*, but with a very distinct male style, with only a small bulge and a very narrow and long apex.

#### ACKNOWLEDGMENTS

Thanks are extended to Michael J. Sharkey, Department of Entomology, University of Kentucky, who made it possible to study the specimens from Colombia through his National Science Foundation Grant no. DEB 0205982. Also thanks to Charles R. Bartlett, Department of Entomology, University of Delaware for the specimens he collected and made available.

#### LITERATURE CITED

- DeLong, D. M. 1979. Studies of the Gyponinae with six new species of *Polana* (Homoptera: Cicadellidae). Proceedings of the Entomological Society of Washington 81(2):298-303.
- DeLong, D. M. and D. R. Foster. 1982. New Species of Bolivian Gyponinae (Homoptera: Cicadellidae). Entomological News 93(4):114-118.
- DeLong, D. M. and P. H. Freytag. 1972. Studies of the World Gyponinae (Homoptera: Cicadellidae) The genus *Polana*. Arquivos de Zoologica, San Paulo 22(5):239-324.
- DeLong, D. M. and B. W. Triplehorn. 1979. New species of Gyponinae (Homoptera: Cicadellidae) from Peru. Brenesia 16:175-188.